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*Descriptions of new species of Reptiles, collected by the U. S. Exploring Expedition, under the command of Capt. Charles Wilkes, U. S. N.*

SECOND PART.—Including the species of Batrachians, exotic to North America.

BY CHARLES GIRARD.

Taking for our guidance the structure of the vomerine or palatine teeth, that of the tympanum and tongue, we have been led to subdivide the genus *Cystignathus* as understood by Duméril and Bibron, in the "Erpétologie générale." The structure of the fingers and toes have afforded accessory characters which are not to be neglected, although comparatively less important.

**LEPTODACTYLUS**, Fitz.—Vomerine teeth disposed in two transverse series, each constituting either an angular arch or a regular curve, and situated behind the inner nostrils. Tongue slightly notched posteriorly. Tympanum very distinct. Toes either provided with a rudimentary membrane or entirely free.

*Obs.*—**LEPTODACTYLUS** **OCCELLATUS**, Fitz. (*C. ocellatus*, Dum. and B.), **L. LABYRINTHICUS** (*Rana labyrinthica*, Spix; *C. labyrinthicus*, Dum. and B.), and **L. TYPHONIUS**, Fitz. (*C. typhonius*, Dum. and B.), belong to this genus.

**CYSTIGNATHUS**, Wagl.—Vomerine teeth disposed upon a transverse or oblique row, more or less interrupted in the middle, and situated either between the inner nostrils or behind them. Tongue circular, subcircular or subcordiform, posteriorly entire, and either attached by its whole surface, or very slightly free behind. Tympanum distinct. Toes either bordered by a membranous fold or slightly webbed at their base.

*Obs.*—**CYSTIGNATHUS** **MACROGLOSSUS**, **C. GRACILIS** and **C. ROSEUS** of Duméril and Bibron will remain in this genus.

**PLEURODEMA**, Tsch.—Vomerine teeth disposed in two oblong groups situated between the inner nostrils. Tongue subcircular, either slightly emarginated or entire posteriorly. Tympanum indistinct. Toes either entirely free, or else provided with a rudimentary membrane at their base or along their margin. Skin pustulous or granular; sometimes a large lumbar gland on each side.

*Obs.*—**PLEURODEMA** **ARUNCO** (*Bufo arunco*, Schn.); **P. BIBRONI**, Tsch. (*C. bibroni*, Dum. and B.); **P. BUFONIUM**, Bell; **P. DARWINII**, Bell; **P. ELEGANS**, Bell, and **P. NODOSA** (*C. nodosus*, Dum. and B.), constitute another generic group.

**CRINIA**, Tsch.—Vomerine teeth either absent or else existing in a rudimentary state. Tongue elongated, subelliptical, posteriorly entire, or very slightly emarginate. Tympanum indistinct or hidden under the skin. Eustachian tubes very small. Fingers and toes subcylindrical, tapering to a point and perfectly free.

*Obs.*—This genus as characterized above, may not meet with the approbation of Erpetologists, as combining species deprived of vomerine teeth and others possessing but very few of them. Indeed, if we had more than one species differing from the others in similar characters, we should not hesitate to make two genera in the following manner:

**CRINIA**, Tsch.—Vomerine teeth few, constituting two groups at the posterior margin of the inner nostrils. Tongue entire, oblong. Tympanum not very distinct. Eustachian tubes quite small. Fingers and toes without membrane.—**CRINIA GEORGIANA**, Tsch.†

RANIDELLA, Girard.—Palate without teeth. Tongue elongated, subelliptica, posteriorly slightly emarginated and free upon one-third of its length. Tympanum not visible. Eustachian tubes minute. Fingers and toes subcylindrical, tapering into a point and perfectly free.—RANIDELLA SIGNIFERA, Girard.

With no specimen of *Crinia georgiana* at our command, we have been unable to compare critically the characters of *Crinias* as just subdivided. For this reason we do not raise *Ranidella* to the rank of a genus for the present. If future investigations do not bring to light other species of each of these subdivisions, we shall not hesitate to consider *Crinia georgiana* and *Ranidella signifera* as congeneric species, in which the character of the vomerine teeth loses that importance which it has elsewhere.

*Ranidella*, as circumscribed above, is related to *Oxyglossus* and *Leiuperus* in the absence of teeth on the palate, differing from both, however, in having its tympanum entirely hidden and its toes perfectly free.

*Crinia georgiana* is an analogue, in Australia, of the South American *Pleurodema*.

WAGLERIA, Girard.—Vomerine teeth disposed on a single and very long transverse row, situated behind the inner nostrils. Tympanum small and not very distinct. Toes bordered by a membranous fold in the male. Tongue but slightly notched posteriorly.

Obs.—WAGLERIA PERONII (*C. peronii*, D. and B.), and W. DORSALIS (*C. dorsalis*, Gray, should the latter prove specifically distinct from the first), are the two species which constitute this genus. Both species are natives of New Holland, and of the first, specimens were collected by the Exploring Expedition in the south-eastern part of Australia. The latter we only know through the brief description of J. E. Gray.

KASSINA, Girard.—Vomerine teeth disposed in two V-shaped groups, situated behind the inner nostrils. Tympanum not distinct. Tongue cordiform, emarginated behind. Fingers free, the first shorter than the second. Toes entirely deprived of membrane. Skin perfectly smooth.

Obs.—KASSINA SENEGALENSIS (*Cystign. senegalensis*, Dum. and B.) is the only species hitherto known of this genus, the diagnosis of which may hereafter require some slight modifications, upon the reception of other species presenting the same disposition of the vomerine teeth.

Thus, the genera *Leptodactylus*, *Cystignathus* and *Pleurodema* are American; the genera *Wagleria*, *Crinia* and *Ranidella* are Australian, and the genus *Kassina* is African.

From want of specimens, and accuracy in their descriptions, we have not been able to determine, generically, *Cystignathus aeneus*, Guich., *C. schomburghii*, Trosch., and *C. sylvestris*, Tsch., all three from South America. The latter, apparently, belongs to the genus *Cystignathus* proper, but seems to be provided with a much smaller number of teeth, and likewise situated more anteriorly than is usually the case in that group. The visibility of the tympanum and the presence of a partial membrane to the toes are strongly suggestive of that genus.

#### RANIDÆ.

1. LEPTODACTYLUS SERIALIS, G.—Greenish brown on the head and back; yellowish brown on the sides and legs, with series of black maculæ. A post-orbital vitta tapering into a point towards the shoulder. Margin of the jaws maculated with black and white. Vomerine teeth disposed upon angular arches. Tongue cordiform, posteriorly free upon one third of its length, slightly emarginated at both extremities. Toes with a rudimentary membrane at their base and along their margin. Skin with indistinct longitudinal dorsal folds, otherwise smooth.

Obs.—Allied to *L. typhonius*, but distinguished from the latter by the structure of the toes.

Locality.—Rio de Janeiro, 1839.

2. *LEPTODACTYLUS CALIGINOSUS*, G.—Reddish brown, with indistinct blackish maculæ on the back, more conspicuous on the hind legs; a large subcordiform occipital macula. A post-ocular vitta extending a little behind the tympanum. Vomerine teeth in regular curves. Tongue subelliptical, elongated, slightly notched at both extremities. Toes provided with a rudimentary membrane at their base and margined by a membranous fold. Skin smooth in the adult, traces of longitudinal folds in the young.

*Obs.*—Differs from the preceding species chiefly in the disposition of the vomerine teeth.

*Locality.*—Rio de Janeiro, Brazil.

3. *CYSTIGNATHUS PARVULUS*, G.—Yellowish brown above, with a deep chestnut narrow band extending from the tip of the snout to beyond the middle of the length of the body. Beneath unicolor. Head subtriangular, wedge-shaped. Anterior part of the snout depressed and regularly inclined towards the margin of the upper jaw. Legs quite slender.

*Locality.*—Rio de Janeiro, Brazil.

4. *CYSTIGNATHUS NEBULOSUS*, G.—Above, light brown, white and clouded with reddish brown; a large subtriangular, occipital, deep brown patch. A post-ocular vitta of the same color. Hind legs barred with reddish brown. Beneath unicolor, whitish anteriorly, reddish posteriorly. Vomerine teeth in two elongated groups, obliquely situated between the inner nostrils; latter proportionally large. Tympanum not visible exteriorly. Eustachian tubes very minute. No lumbar glands. Fingers and toes depressed, latter margined with a membranous fold, otherwise smooth. Two metatarsal tubercles. Tarsus with a ridge along its inner margin. Skin minutely granular.

*Locality.*—Valparaiso, Chili.

5. *CRINIA (RANIDELLA) SIGNIFERA*, G.—Skin above subtuberculous, beneath glandulous. A spear-shaped blotch on the head. A broad dorsal, deep brown band, forked anteriorly to receive the point of the cephalic spear-shaped blotch. On each side of the latter a greyish or yellowish grey narrow band, beneath which is another, still narrower, blackish brown band. Sides of abdomen and belly marmorated.

*Locality.*—New Holland.

#### HYLÆ.

—*RANOIDEA*, Tsch.—Vomerine teeth disposed in two groups situated between the inner nostrils. Tongue large, subcircular or elliptical, slightly notched posteriorly, and free for about one-third or less of its length. Tympanum distinct. Eustachian tubes of considerable development. Fingers and toes depressed, terminated by subelliptical disks, comparatively small. Fingers perfectly free; toes webbed to a considerable degree. A vocal subgular bladder in the male.

*Obs.*—The characters of this genus when compared to those of *Hyla*, may appear negative. The general physiognomy, which is more ranoid than hyloid, and the smallness of the subdigital disks, are the two most prominent features of this group. The addition of two species partaking of the characters of the one, unique when the genus was made, will add to the importance of retaining it in the herpetological system. If habits go for any thing in the distinction of genera, the fact that *Ranoidea* are more frequently seen about the waters than on the trees, would certainly have a weight upon the question.

6. *RANOIDEA RESPLENDENS*, G.—Deep green above, maculated and streaked with gold. Head depressed, elongated. Tongue of medium size, notched and free posteriorly. Vomerine teeth in two transversely elongated groups, situated between the inner nostrils; latter semicircular, large. Openings of the Eustachian tubes as large as the inner nostrils. Tympanum very distinct, large, elliptical. Fingers free. Toes webbed up to the digital disks; membrane emarginate.

*Locality.*—Wollongong Illawara, near the coast.

7. *RANOIDEA FLAVOVIRIDIS*, G.—Above green, with a black line along the can-



thus rostralis, and a black band behind the eye. Posterior parts of thighs purplish, with white dots. Head flat, discoid. Tongue large, elliptical, slightly notched and free posteriorly. Vomerine teeth in two oblong groups between the inner nostrils, the latter being very large. Tympanum of medium size, circular. Fingers free. Toes webbed to the middle of the last phalanx; membrane slightly emarginated.

*Locality*.—Wollongong Illawara; about fresh water streams.

HYLARANA, Tsch.—Tongue elongated, narrower in front, broad and forked posteriorly. Two groups of vomerine teeth, between and sometimes a little behind the inner nostrils. Tympanum very distinct. Eustachian tubes of medium size. Four fingers entirely free; toes united by a membrane to almost their whole length; subdigital disks of medium size.

*Obs.*—*Hylarana* has the priority over *Lymanodytes*, therefore it is here adopted. HYLARANA ERYTHREA (*Hyla erythraea*, Schleg.); H. CHALCONOTA (*Hyla chalconota*, Schleg.), and H. WAIGIENSIS (*Lymanodytes waigiensis*, Dum. and B.)

8. HYLARANA MINDANENSIS, G.—Uniform greenish brown, lighter beneath; upper jaw provided with several darker spots. Vomerine teeth disposed in two elongated groups or series, situated between and behind the inner nostrils. Skin provided with small pustules, but showing no traces of a lateral glandulous chain.

*Locality*.—Caldera, on Mindanoo.

HALOPHILA, Girard.—Vomerine teeth forming two oblong groups, situated between and somewhat behind the inner nostrils. Tongue elongated, lanceolated, narrow anteriorly, forked posteriorly, and free for about half its length. Tympanum very distinct. Eustachian tubes of medium size. Four fingers entirely destitute of membrane. Toes united at their base only by a rudimentary membrane. Subdigital and terminal disks either but little or much developed.

9. HALOPHILA HEROS, G.—Greenish brown, with a dorsal light and narrow line. Sides of abdomen and legs with blackish spots; beneath dull brown. Rudimentary membrane of the base of the toes almost obliterated. Subdigital disks small in both pairs of limbs.

*Locality*.—Sebukea, Fiji Islands.

10. HALOPHILA VITIENSIS, G.—Uniform yellowish orange when adult; the young yellowish purple, with golden reflections on the head and back, a whitish line on the middle of the back, flanked with black maculae; legs transversely barred with black. Rudimentary membrane of the base of the toes very distinct. Subdigital disks large in both pairs of limbs.

*Locality*.—Sebuka, Fiji Islands.

11. HYLODES PARVUS, G.—Uniform blackish brown. Vomerine teeth disposed upon two elongated groups obliquely situated behind the inner nostrils. Tongue cordiform, posteriorly entire. Fingers and toes subcylindrical and slender. Digital disk small.

*Locality*.—Rio de Janeiro, Brazil.

12. ELOSIA BUFONIUM, G.—Vomerine teeth in two small oblong groups, situated obliquely between the inner nostrils, in advance of the posterior margin of these openings. Tongue discoid, large. Tympanum of medium size. Eyes large and prominent. Legs comparatively small. Two very small metatarsal tubercles, and a membranous ridge along the inside of the tarsus. Skin quite smooth, without any pustules at all.

*Locality*.—Rio de Janeiro, Brazil.

13. ELOSIA VOMERINA, G.—Head and back dusky brown; posterior part of back and legs maculated. A deep brown band extending from the side of the head over the eye to the side of the back. Beneath unicolor. Vomerine teeth disposed on a transverse line, interrupted in its middle, and placed on a level with the anterior margin of the inner nostrils. Tongue subcircular, discoid. Tympanum of medium size. Eyes well developed. Legs long and slender. Two

metatarsal tubercles, and a cutaneous fold on the inside of the tarsus. Skin smooth.

*Locality*.—Rio de Janeiro, Brazil.

#### BUFONIDÆ.

14. *RHINODERMA SIGNIFERA*, G.—Head and body above reddish, dotted with white. A few transverse, narrow black bars on the hind legs; an elongated whitish spot behind the occiput; an elliptical, greyish, lumbar ocellus, black-spotted posteriorly. Abdomen maculated with white and black. Toes elongated, webbed at their base only. Tubercles under the articulations of the fingers and the toes.

*Locality*.—Rio de Janeiro, Brazil.

15. *BUFO LUGUBROSUS*, G.—Head and dorsal region blueish black; sides reddish grey with black patches. Tympanum black; limbs black spotted. Beneath dull yellowish white. First finger longer than the second, and almost as long as the third. Upper surface of head grooved from occiput to the snout. Eyes protected anteriorly and posteriorly by an elevated ridge. Tympanum quite small. Parotids of medium size, not very conspicuous. Toes webbed at their base only. Two metatarsal tubercles, and another at the base of the inner toe. A membranous ridge along the inner side of the tarsus. Skin glandulous and granulated.

*Locality*.—Valparaiso, Chili.

16. *BUFO GRACILIS*, G.—Upper parts yellowish brown: a yellow dorsal vitta, on each side of which are black angular and irregular spots. Limbs marked with blackish blotches. Sides light yellow. Beneath dull yellow. First finger longer than the second, and almost as long as the third. Upper surface of head, between and behind the eyes, concave. Snout even above, and obliquely truncated inwardly. Tympanum comparatively large. Parotids very small and exiguous; a lateral glandulous fold of the skin from the parotids to the groins. Toes webbed only at their base. Metatarsal tubercles inconspicuous. A membranous fold along the inner side of the tarsus. Skin granular.

*Locality*.—Rio de Janeiro, Brazil.

—*BUFONELLA*, Girard.—Tongue elongated, broadest posteriorly and free to a certain extent, slightly emarginated behind. No teeth on the palate. Tympanum distinct. No parotid glands. Four fingers, free and subcylindrical. Five toes, of the same form as the fingers, neither webbed nor provided with any rudimentary membrane.

*Obs*.—Allied to *Bufo*, *Engystoma* and *Breviceps*.

17. *BUFONELLA CRUCIFERA*, G.—Deep brown above; back dotted with yellow; a yellow spot at the origin of the arms; a yellow band across the head, over the eyelid, sending off a medial branch to the snout; a yellow dorsal vitta on the posterior half of the body. Beneath blackish brown, with large yellowish maculæ under the head, belly and legs. Tip of fingers and toes yellow. Head and body elongated; former depressed; latter subcylindrical. First finger shorter than the second. Toes free. Metatarsal tubercles indistinct.

*Locality*.—New Holland.

*METAÆUS*, Girard.—Tongue subelliptical, entire, free posteriorly for about half of its length. Palate without teeth. Tympanum hidden under the skin. No parotid glands. Four fingers and five toes completely free. Two metatarsal tubercles.

*Obs*.—Related to *Engystoma*.

18. *METAÆUS TIMIDUS*, G.—Greenish brown above, maculated with brownish black. A vitta extends from the snout, across the eye, to the shoulder. Head large, rounded on the snout. Fingers and toes subcylindrical. Skin provided with small pustules.

*Locality*.—Valparaiso, Chili.

